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# PROXIMATE COMPOSITION OF FRESH VEGETABLES

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## INTRODUCTION

In the last three decades the American public has become familiar with a much greater variety of fresh vegetables. Plant explorers have brought new species and varieties from foreign countries, and improved marketing methods and transportation facilities have widened distribution. Chinese cabbage, broccoli, dasheens, and a score more considered new or unusual a few years ago are now a matter of course in many parts of the country. Accordingly an added demand has arisen for data on the chemical composition and nutritive value of vegetables.

Since the last revision of Atwater and Bryant's bulletin<sup>2</sup> many proximate analyses of vegetables have been made. For the present tables published and unpublished analyses have been collected from a great many sources and used together with most of the data represented in the earlier summary. Unpublished analyses have been contributed by the Bureau of Chemistry and Soils, the Food, Drug, and Insecticide Administration, the Bureau of Plant Industry, and other laboratories in this department. The Bureau of Standards, United States Department of Commerce, and the California and Maryland State Agricultural Experiment Stations have also supplied analytical data. Published analyses have been taken from so many sources that it would be impracticable to enumerate them.

In general the plan is similar to that adopted for the tables on the proximate composition of fresh fruits and fruit juices issued in 1928.<sup>3</sup> The data used have been selected after careful examination of the various reports for evidences of undue variation in the character of

<sup>1</sup> Acknowledgment is made to Laura I. McLaughlin, formerly nutrition chemist, Bureau of Home Economics, for her work in the collection of data.

<sup>2</sup> ATWATER, W. O., and BRYANT, A. P. THE CHEMICAL COMPOSITION OF AMERICAN FOOD MATERIALS U. S. Dept. Agr., Off. Expt. Stas., Bul. 28, 87 p., illus. 1899. (Revised ed. Reprinted 1906.)

<sup>3</sup> CHATFIELD, C., and McLAUGHLIN, L. I. PROXIMATE COMPOSITION OF FRESH FRUITS. U. S. Dept. Agr., Circ. 50, 20 p. 1928.

the sample. Important differences in method of sampling or analytical methods were considered, but fully half of the reports did not give definite information on these points. In the absence of exact descriptions of the sample or of full statements about laboratory methods, the data were included if the samples seemed comparable and the results of sufficient accuracy for the present purpose.

For the most part the later analyses were made by the methods of the Association of Official Agricultural Chemists <sup>4</sup> or by slight modifications of these procedures. The methods used in the earlier studies under the direction of W. O. Atwater are comparable with those now in use.

The Bureau of Plant Industry has helped in the classification and in some cases in the selection of the data. Great care has been taken to choose representative and varied samples of each vegetable so far as could be done with the material at hand and to exclude samples that differed too widely from the usual types and conditions of the vegetable as found on the market. Wide variations occur in the composition of many of the vegetables due to differences in maturity or in conditions and duration of storage. The variations here shown usually give a fair picture of actual differences in the material on the market, but the causes could seldom be made evident in a generalized form.

The data on different species are usually reported separately wherever possible even though the figures may not show significant or characteristic differences. Within any species, however, classes, varieties, types, or forms were not reported separately unless significant differences are actually shown or might be expected to be present.

## DEFINITION OF TERMS

### EDIBLE PORTION

The part of the plant represented as edible in these analyses is indicated in the majority of cases after the name of the vegetable. Sometimes this information had to be supplied since the original reports even in the more recent studies often were not explicit. Descriptions of the commonest vegetables are omitted unless needed to avoid confusion. So far as the data permitted the description is given wherever there might be doubt, as for example where more than one part of the plant is commonly used as a vegetable. This statement does not apply, however, to distinctions between peeled and unpeeled vegetables which are discussed later. The parts analyzed as edible portion and those reported as refuse are not always mutually exclusive. In some instances parts of the plant considered refuse by some investigators were judged edible by others, and therefore absolute uniformity does not prevail in all the chemical samples.

Data are included here on numerous samples that were not reported under the descriptive terms applied to the averages. For example, none of the samples of chicory were specified as leaves only, but the context indicated plainly that this was the part analyzed rather than the root, which is also sometimes eaten. Furthermore,

<sup>4</sup> ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS. OFFICIAL AND TENTATIVE METHODS OF ANALYSIS. Compiled by the committee on editing methods of analysis. Revised to July 1, 1924. Ed. 2, 535 p., illus. Washington, D. C. 1925



samples of such vegetables as endive described in the reports as "leaves and stems" are combined here with others described as "leaves."

Skins or peelings of vegetables were included in some of the samples analyzed chemically and not in others, and often it was impossible to know which way the sample had been prepared. This was particularly true in vegetables like potatoes with skins that are edible but usually discarded. Usually too few samples were described clearly to show differences due to manner of sampling. To report the averages of these few separately would be unsatisfactory if not actually misleading. Probably the difference in composition between whole and peeled potatoes, for example, could be shown by a direct comparison based on a moderate number of identical tubers or on samples that were otherwise alike. Lacking such a comparison, however, the differences in proximate composition due to the inclusion of skin are not great enough to be clearly demonstrated; other variations obscure the point. Consequently no serious error has been introduced here by summarizing the data on samples of the whole and the pared vegetable together.

Other possible differences in what is included in "edible portion" may occur in such vegetables as cauliflower and summer squash on which opinions differ as to the part edible. Some samples of cauliflower may have included leafstalks but most of them, in all probability, contained only the flower bud and some of the flower stalk. The entire fruit of the summer squash was probably analyzed in some of the samples, while others may have excluded the skin and seed part. There seems little doubt though that differences of this kind would be no wider than other differences in variety or condition.

All of the data on chemical constituents refer to the part analyzed as edible. In the line designated as A. P. the values are calculated as percentages of the weight "as purchased" but they refer only to the constituents of the edible portion.

#### REFUSE

Data on the refuse are reported in percentages as purchased. The part of the vegetable that is represented here is indicated as definitely as the original data permitted. Because of the great variation in the form and condition of the vegetables as purchased and also in the parts discarded it was sometimes difficult, when the refuse was not described in the original reports, to tell exactly what was meant. By comparison with other figures from reports that were more explicit it was often possible, however, to arrive at a fairly safe assumption. In particularly doubtful cases, and usually for vegetables purchased sometimes with tops and sometimes without, explanation is given by footnote.

#### AVERAGES AND VARIATIONS

Averages are arithmetical means of individual values as given in percentage of the fresh edible portion. Probable error, indicated as P. E., has been given to indicate variation in individual determinations and is the standard deviation  $\times 0.6745$ .

#### WATER

Water content refers to the loss in weight from drying or the difference between the weight of the total solids and the fresh substance. In some cases the material was air dried at 100° C. and in others it was dried in vacuum at lower temperatures. Probably the errors due to variations in the method of determination are greater in this constituent than in any of the others.

#### PROTEIN, FAT, AND ASH

Protein was calculated as  $N \times 6.25$ , the nitrogen being determined by the Kjeldahl method or one of its modifications. Fat was determined as ether extract, and it includes therefore other ether-soluble substances such as plant pigments. Ash is the residue from burning the dry substance until it is free from carbon.

#### CARBOHYDRATES

##### TOTAL BY DIFFERENCE

The term "total by difference including fiber" under carbohydrates refers to solids other than protein, fat, and ash. Like nitrogen-free extract it includes organic acids and undetermined solids as well as the substances properly classed as carbohydrates. It is numerically equal to the sum of nitrogen-free extract and fiber. It is apparent that any errors in the determination of water, protein, fat, or ash will be reflected in this quantity and that it is therefore less reliable than a direct determination. No indication of the variation in this quantity is given since individual calculations of it were not recorded, but it can be assumed that the variation in this group of substances would be of about the same order as that of the water content.

##### FIBER

Fiber is the loss in weight from incinerating the residue obtained by successive treatments of the fat-free dry substance with dilute sulphuric acid and dilute sodium hydroxide.

##### TOTAL SUGARS

The sugar determinations were made for the most part on the alcoholic extract, though some were made on the water extract. Copper reduction methods predominated, but a few of the determinations were made by means of picric acid. The values determined by copper reduction were reported sometimes in terms of dextrose or of invert sugar but often the basis was not indicated. It was impossible to convert these to a strictly uniform basis. The variations due to these discrepancies are however of relatively small magnitude.

##### STARCH

The majority of the starch determinations were made by the diastase method although acid hydrolysis was used in a few cases. Some reports did not indicate the method. Often the figures represent total acid hydrolyzable polysaccharides calculated as starch, but wherever dextrin occurred in appreciable amounts, as in corn, the usual separation was made. It is recognized that the acid-hydrolysis



method gives results that are high for starch. Wherever considerable errors could have been introduced by including values obtained by this procedure footnotes indicate the method.

#### TOTAL AVAILABLE CARBOHYDRATE

Total available carbohydrate as reported here in footnotes has been determined directly and represents, essentially, the sum of starch and sugars. The total reducing substances after hydrolysis were determined by picric acid or by copper reduction methods. Here, as in the case of starch, conversion was effected by acid hydrolysis in a few instances but except as noted, this could have introduced only negligible errors.

#### FUEL VALUE

Fuel value is expressed in calories which were calculated on the basis of the physiological fuel values, that is, 4 calories per gram of protein and of carbohydrates and 9 per gram of fat.

#### ACCURACY AND LIMITATIONS OF THE FIGURES

The figures here presented are the result of a critical study of the source material. They are as reliable and accurate as they could be made with the data available. There are, however, certain necessary limitations imposed on any such attempt to give a composite picture of substances that vary as much among themselves as do the individual vegetables in any one group. The figures should be used, therefore, with an understanding of their limitations.

On account of this variability in the composition of vegetables, the averages of a class can be only rough estimates at best of the composition of a particular sample. Some of the averages represent samples from numerous types of the vegetable, grown in different localities under varied conditions, and taken at several stages of maturity. These probably are fairly reliable as average figures for their class. For others it was impossible to get data that could be regarded as representative of the class as a whole.

Many of the data came from analyses incomplete in the sense that not all of the constituents in the table were determined. This is evident from the differences in the number of analyses as shown in the last line under each vegetable. Attention is called to the fact that the determinations of a particular constituent, as sugars for example, may have come from an entirely different lot of material than that on which water content was determined. This accounts for some of the discrepancies.

If all of the analyses were complete it would be expected that the sum of sugar, starch, and fiber would be less than total carbohydrates by difference. Actually the total of the three in the tables is greater in some vegetables, and in others the undetermined portion seems too high to be due entirely to the presence of such substances as hemicelluloses. Discrepancies of this kind may be due either to inaccuracy of analytical technic or to errors of sampling.

## Composition of fresh vegetables

		As pur- chased	Edible portion										
		Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Carbohydrates				Fuel value		
							Total by difference, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound	
		<i>P. ct. Tough stems</i> <sup>1</sup>											
<b>Amaranth</b> , Chi- nese ( <i>Amaranthus</i> spp.): Leaves and stems.	Av...	29	88.6	3.0	0.6	2.23	5.6	1.0					
	P. E.		2.5	.7	.4	.42		.2					
	Max.		92.3	4.6	1.7	3.21		1.5					
	Min.		83.4	1.7	.1	1.56		.8					
	A. P.		62.9	2.1	.4	1.6	4.0	.7				28	125
	No...	1	6	6	6	6		4		1			
<b>Anserine</b> (see Lambsquarters, Algerian)													
<b>Artichokes</b> , Globe or French ( <i>Cyn- ara scolymus</i> ).	Av...	52	83.7	2.9	.4	1.1	11.9	3.2			62.8	285	
	Max.	68	85.8	2.9		1.2		3.2					
	Min.	37	81.6	2.9		.9		3.1					
	A. P.		40.2	1.4	.2	.5	5.7	1.5			30	135	
	No...	3	2	2	1	2		2					
<b>Artichokes</b> , Jeru- salem (see Jeru- salem-artichokes).													
<b>Asparagus</b> ( <i>Aspar- agus officinalis</i> ).	Av...	25	93.0	2.2	.2	.67	3.9	.7	1.34		.4	26.2	120
	P. E.	7.6	.6	.4		.09			.30		.1		
	Max.	57	94.4	3.4	.3	.97		.9	2.96		.7		
	Min.	13	90.8	1.1	.0	.49		.7	.59		.1		
	A. P.		69.8	1.6	.2	.5	2.9	.5				20	90
	No...	17	52	90	18	19		24	37	4			
<b>Asparagus - beans</b> ( <i>Vigna sesquiped- alis</i> ): Green pods.													
	Av...		84.5	3.4	.3	1.3	10.5	2.0	5.1		2.7	58.3	265
	P. E.		3.0			.4							
	Max.		90.6	4.5	.5	2.4		2.6					
	Min.		79.9	2.7	.2	.7		1.4					
	No...		4	3	3	4		3	1	1			
Sprouted seeds.	One...		92.8	2.4	.4	.4	4.0	.7				29.2	130
	No...		1	1	1	1		1					
<b>Bamboo shoots</b> ( <i>Phyllostachys</i> spp.). <sup>5</sup>													
	Av...	71	91.3	2.5	.3	.79	5.1	.8				33.1	150
	P. E.		1.0	.4	.1	.14		.2					
	Max.	72	93.1	3.7	.5	1.19		1.0					
	Min.	70	88.1	1.7	.1	.4		.2					
	A. P.		26.5	.7	.1	.2	1.5	.2				10	45
	No...	3	13	13	12	13		6					
<b>Basella</b> (see Vine- spinach).													

<sup>1</sup> Original report did not describe refuse; presumably tough stems.<sup>2</sup> No data on sugar. Total available carbohydrate, one sample, 1.6 per cent.<sup>3</sup> Waste leaf, stem, and flower.<sup>4</sup> Presumably includes a considerable proportion of inulin.<sup>5</sup> Samples are mainly of this genus, but one at least was *Bambusa* sp. Scientific names are not recorded in all cases, so other genera that are used for edible shoots may be included.<sup>6</sup> Original reports did not describe refuse; presumably sheath.<sup>7</sup> According to one report, there is approximately 1.2 per cent reducing sugars, and 1.3 per cent made up of lignin and pentosans.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion											
			Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Carbohydrates			Fuel value			
								Total by differ- ence, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound	
<b>Beans:</b> Broadbean ( <i>Vicia faba</i> ): Green, shelled.  Green pods.  Hyacinth-bean ( <i>Dolichos lab-</i> lab): Green pods.  Lima ( <i>Phaseo-</i> <i>lus lunatus</i> <i>macrocarpus</i> ): Green, shelled.  Mung Bean sprouts ( <i>Phase-</i> <i>olus aureus</i> ).  Scarlet Runner ( <i>Phaseolus</i> <i>coccineus</i> ): Green pods.  Snap beans ( <i>Phaseolus vul-</i> <i>garis</i> ).  Soybeans (see Soybeans). String (see Beans, Snap).	<i>P. ct.</i> <i>Shells</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>Cals.</i>	<i>Cals.</i>		
	Av...	66	74.1	8.1	0.6	1.4	15.8	2.0				101.0	460	
	P. E.		9.2	3.3	.3	.7								
	Max.	69	89.6	17.5	1.3	3.4		2.5						
	Min.	64	50.6	3.2	.2	.5		1.3						
	A. P.		25.2	2.8	.2	.5	5.3	.7				34	155	
	No...	2	5	5	4	5		3						
	One...		84.0	3.0	.3	.8	11.9					62.3	285	
	No...	1	1	1	1									
	Av...		89.9	2.8	.2	.8	6.3	1.7				38.2	175	
	Max.		92.2	3.3	.3	1.0								
	Min.		87.6	2.3	.2	.6								
	No...	2	2	2	2			1						
	Av...	<i>Shells</i>	60	66.5	7.5	.8	1.71	23.5	1.5				131.2	595
	P. E.	6.9	2.9	.7	.2	.17			.3					
	Max.	72	71.8	9.4	1.3	2.0			2.0					
	Min.	44	58.9	6.4	.6	1.24			.8					
	A. P.		26.6	3.0	.3	.7	9.4	.6				52	235	
	No...	7	5	5	4	5			4					
	Av...		92.4	2.9	.3	.44	4.0	.7				30.3	135	
	P. E.		.6	.2	.1	.05		.2						
	Max.		93.8	3.4	.6	.53		1.1						
	Min.		91.2	2.5	.0	.31		.3						
	No...	6	6	6	6			4						
Av...	<i>Ends and strings</i> <sup>s</sup>	8	92.3	1.4	.1	.7	5.5	.8			0.1	28.5	130	
Max.			93.2	1.5										
Min.			91.8	1.4										
A. P.			84.9	1.3	.1	.6	5.1	.7				26	120	
No...	1	3	2	1	1		1			1				
Av...	<i>Ends and strings</i>	10	88.9	2.4	.2	.77	7.7	1.4	0.37	2.2	42.2	190		
P. E.	2.6	2.8	.5	.1	.05			.4	.08	.7				
Max.	18	94.0	4.3	.4	.9			2.6	.64	3.8				
Min.	2	78.8	1.4	.1	.63			.8	.26	.8				
A. P.		80.0	2.2	.2	.7	6.9	1.3				38	170		
No...	29	26	25	21	14			8	7	7				

\* Original report did not describe refuse; presumably ends and strings.



## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion										
			Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Carbohydrates			Fuel value		
								Total by difference, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
			P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
<b>Beets</b> ( <i>Beta vul- garis</i> ): Common, red.	Av...	25	87.6	1.6	0.1	1.11	9.6	0.9				45.7	205
	P. E.	6	2.1	.2		.61		.2					
	Max	35	94.1	2.2	.3	2.0		1.7					
	Min.	14	82.3	.9	.0	.7		.6					
	A. P.		65.7	1.2	.1	.8	7.2	.7				34	155
<b>Beet greens</b> ( <i>Beta vulgaris</i> ): Common.	No...	4	32	29	26	27		20					
	Av...		90.4	2.0	.3	1.7	5.6	1.4	0.5			33.1	150
	P. E.		2.1	.5		.5							
	Max		96.7	3.1	.6	2.8		2.5					
	Min.		86.2	.6	.0	.7		.6					
<b>Sugar beet.</b> <sup>10</sup>	No...	8	7	5	4		3	1					
	Av...		87.5	2.2	.1	1.3	8.9	1.3				45.3	205
	P. E.		87.9	2.4	.2	2.0		1.5					
	Max		87.1	1.9	.0	.7		1.1					
	Min.												
<b>Black-salsify</b> ( <i>Scor- zonera hispanica</i> ).	No...	2	2	2	2		2						
	Av...	Scrap- ings 20	77.2	3.1	.3	.81	18.6	2.3				89.5	405
	P. E.		3.6	1.0		.09							
	Max		84.2	4.6	.5	.99		2.3					
	Min.		71.5	1.0	.2	.66		2.3					
<b>Borage</b> ( <i>Borago officinalis</i> ): Leaves and stems.	A. P.		61.8	2.5	.2	.6	14.9	1.8				71	320
	No...	1	4	4	3	4		2					
	Av...		89.4	2.8	.4				.1	0.2			
	P. E.		90.1	3.0	.4				.1	.3			
	Max		88.8	2.6	.3				.1	.2			
<b>Broccoli</b> ( <i>Brassica oleracea botrytis</i> ): Flower stalks.	Min.												
	A. P.												
	No...	1	1	1	1	1		1	1				
	Av...	Leaves and tough stalk	89.9	3.3	.2	1.1	5.5	1.3	1.9			37.0	170
	P. E.	53	42.3	1.6	.1	.5	2.5	.6	.9			17	75
<b>Brussels Sprouts</b> ( <i>Brassica oleracea gemmifera</i> ).	Max												
	Min.												
	A. P.												
	No...	1	5	4	3	4		2					
	Av...	Stalks and outer leaves	84.9	4.4	.5	1.23	8.9	1.3				57.7	260
<b>Brussels Sprouts</b> ( <i>Brassica oleracea gemmifera</i> ).	P. E.	23	1.9	.4		.08							
	Max		88.3	5.5	.6	1.41		1.5					
	Min.		81.0	3.8	.3	1.1		1.1					
	A. P.		65.4	3.4	.4	1.0	6.8	1.0				44	200
	No...	1	5	4	3	4		2					

<sup>4</sup> Presumably includes a considerable proportion of inulin.<sup>9</sup> These figures include skins and base of leafstalks, tops not included as purchased. Total refuse, including tops, 3 samples, av. 47 per cent; max. 54 per cent; min. 40 per cent.<sup>10</sup> Samples included here were analyzed as feeding stuffs, and were probably rather mature.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion										
			Refuse	Water	Protein (N× 6.25)	Fat	Ash	Carbohydrates			Fuel value		
								Total by difference, includ- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
<b>Burdock</b> ( <i>Arctium lappa</i> ): Roots.	Av. . . . .	<sup>11</sup> 34	P. ct. 72.4	P. ct. 3.0	P. ct. 0.1	P. ct. 1.14	P. ct. 23.4	P. ct. 2.3	P. ct. 7.3	P. ct. 0.3		106.5	Cals. 485
	P. E. . . . .		4.5	.8		.27		.5					
	Max. . . . .		79.4	4.5	.2	1.90		3.8					
	Min. . . . .		60.6	1.1	.1	.63		1.5					
	A. P. . . . .		47.8	2.0	.1	.8	15.3	1.5				70	320
	No. . . . .	1	9	9	9	9		7	1	1			
		Outer leaves and core											
<b>Cabbage</b> ( <i>Brassica oleracea capitata</i> ).	Av. . . . .	27	92.4	1.4	.2	.75	5.3	1.0	3.5	( <sup>12</sup> )		23.6	130
	P. E. . . . .	9.8	1.0	.3	.1	.11		.2	.3				
	Max. . . . .	57	94.8	3.1	.5	1.07		1.4	4.8				
	Min. . . . .	1	83.4	.8	.1	.34		.5	2.9				
	A. P. . . . .		67.5	1.0	.1	.5	3.9	.7				20	90
	No. . . . .	27	56	53	20	24		10	20				
		Outer leaves and core <sup>13</sup>											
<b>Cabbage, Chinese</b> ( <i>Brassica chinensis</i> and <i>B. pekinensis</i> ): Pakchoi and Petai.	Av. . . . .	13	95.2	1.4	.1	.89	2.4	.6	.9	.2		16.1	75
	P. E. . . . .		.5	.2	.1	.21		.2	.3				
	Max. . . . .		96.6	2.2	.4	1.31		.8	1.4	.3			
	Min. . . . .		93.7	.8	.0	.49		.4	.3	.0			
	A. P. . . . .		82.8	1.2	.1	.8	2.1	.5				14	65
	No. . . . .	1	16	15	15	15		13	4	3			
		Tops and scrap- ings <sup>14</sup>											
<b>Carrots</b> ( <i>Daucus carota</i> ).	Av. . . . .	37	88.2	1.2	.3	1.02	9.3	1.1	7.5	( <sup>15</sup> )		44.7	205
	P. E. . . . .	3.8	1.4	.3	.1	.17		.2					
	Max. . . . .	45	91.1	2.3	.7	1.55		2.3	8.7				
	Min. . . . .	30	83.1	.7	.0	.62		.7	6.2				
	A. P. . . . .		55.6	.8	.2	.6	5.8	.7				23	125
	No. . . . .	4	25	24	20	23		20	3				
<b>Catjang-peas</b> ( <i>Vig- na catjang</i> ): Green pods.	Av. . . . .		87.3	3.3	.4	.7	8.3	1.7				50.0	225
	Max. . . . .		89.0	3.8	.6	.8		1.9					
	Min. . . . .		86.2	2.3	.1	.6		1.4					
	No. . . . .		3	3	3	3		3					
<b>Cauliflower</b> ( <i>Bras- sica oleracea botry- tis</i> ).	Av. . . . .	<sup>16</sup> 55	91.7	2.4	.2	.85	4.9	.9	2.6	( <sup>17</sup> )		31.0	140
	P. E. . . . .	5.0	1.1	.5		.14			.6				
	Max. . . . .	64	93.8	4.0	.2	1.20		1.0	4.9				
	Min. . . . .	46	87.6	1.6	.2	.6		.9	1.8				
	A. P. . . . .		41.3	1.1	.1	.4	2.1	.4				14	65
	No. . . . .	6	14	7	3	5		3	8				

<sup>4</sup> Presumably includes a considerable proportion of inulin.<sup>11</sup> Original report did not describe refuse; presumably scrapings, rootlets, and base of leafstalks.<sup>12</sup> No data on starch, presumably average is less than 1 per cent. Total available carbohydrate, 2 samples, av. 5.1 per cent; max. 5.8 per cent; min. 4.4 per cent.<sup>13</sup> Original report did not describe refuse; presumably outer leaves and core.<sup>14</sup> Tops only, 3 samples, av. 27 per cent; max. 38 per cent; min. 20 per cent. Scrapings only, in percentage of sample without tops, 3 samples, av. 12 per cent; max. 16 per cent; min. 9 per cent.<sup>15</sup> No data on starch. Total available carbohydrate, 2 samples, av. 7.6 per cent; max. 9.0 per cent; min. 6.2 per cent.<sup>16</sup> These figures include main stalk and base of leafstalks. Main stalk only, considering base of leafstalks edible, 2 samples, av. 43 per cent; max. 44 per cent; min. 42 per cent.<sup>17</sup> No data on starch, presumably average is less than 1 per cent. Total available carbohydrate, 4 samples, av. 3.5 per cent; max. 5.9 per cent; min. 2.5 per cent.



## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion									
		Refuse	Water	Pro- tein (N X 6.25)	Fat	Ash	Carbohydrates				Fuel value	
							Total by difference, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
<b>Celeriac</b> ( <i>Celeri graveolens</i> ): Roots.	<i>P. ct. Par- ings</i> <sup>18</sup>											
	Av. 14	88.3	1.7	0.3	0.9	8.8	1.4	0.8	0.1		44.7	205
	P. E. Max.	1.7	1.9	.4	1.0		1.4					
	Min.	84.1	1.5	.2	.8		1.4					
	A. P.	75.9	1.5	.3	.7	7.6	1.2				39	175
<b>Celery</b> ( <i>Celeri graveolens</i> ): Stalks.	No. 2	4	3	3	3		2	1	1			
	Av. 37	93.7	1.3	.2	1.08	3.7	.7	1.25	(20)		21.8	100
	P. E. Max.	7.9	1.1	.3	.15		.1	.37				
	Min.	50	95.2	2.0	.3	1.56	.9	2.28				
	A. P.	12	89.9	.7	.1	.8	.5	.52			14	65
<b>Chard</b> ( <i>Beta vul- garis</i> ): Leaves only.	No. 9	15	11	8	9		5	14				
	Av.		91.0	2.6	.4	1.20	4.8	.8	.82	.1	33.2	150
	P. E. Max.		.8	.2	.1	.28		.2	.17			
	Min.		92.9	2.9	.5	1.78		1.0	1.23			
	A. P.		89.9	2.0	.2	.63		.4	.52			
<b>Stalks only.</b>	No.	4	4	4	4		4	4	1			
	Av.		95.2	1.0	.1	.8	2.9	.4	1.1	.7	16.5	75
	P. E. Max.		95.9	1.0	.1	.8		.6				
	Min.		94.6	.9	.1	.8		.3				
	A. P.											
<b>Leaves and stalks.</b>	No. 2	2	2	2	2		2	1	1			
	Av.		91.8	1.4	.2	2.2	4.4	.9			25.0	115
	P. E. Max.		92.2									
	Min.		91.5									
	A. P.											
<b>Chayote</b> ( <i>Chayota edulis</i> ): Fruit.	No. 2	1	1	1	1		1					
	Av.		91.6	1.0	.1	.48	6.8	.8	3.1	1.6	32.1	145
	P. E. Max.		1.4	.2	.08	.7		.2	.7	.6		
	Min.		96.0	1.6	.3	.7		1.4	6.0	3.0		
	A. P.		86.0	.7	.0	.28		.3	2.2	.6		
<b>Roots.</b>	No. 3	16	16	15	16		14	11	6			
	Av.		77.4	1.8	.1	1.1	19.6	.8	.5	20.0	86.5	390
	P. E. Max.		2.5	.6				.2				
	Min.		80.5	2.6	.2	1.2		.9	.8			
	A. P.		71.0	.4	.1	1.0		.7	.0			
<b>Leaves.</b>	No. 4	4	4	4	3		3	4	1			
	Av.		91.0	3.2	.7	1.2	3.9	1.4	1.1		34.7	155
	P. E. Max.		91.2	4.0	1.0	1.3		1.7				
	Min.		90.8	1.7	.5	1.0		1.0				
	A. P.											

<sup>18</sup> Original reports did not describe refuse; presumably parings.<sup>19</sup> Original reports did not describe refuse in most cases; presumably leaves and upper part of leafstalks.<sup>20</sup> No data on starch, presumably average is less than 1 per cent. Total available carbohydrate, 2 samples, av. 1.1 per cent; max. 1.7 per cent; min. 0.6 per cent.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion										
			Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Carbohydrates			Fuel value		
							Total by difference, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound	
		P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.	
<b>Chervil</b> ( <i>Anthriscus cerefolium</i> ): Leaves.	One...	-----	80.7	3.4	0.9	3.5	11.5	-----	-----	-----	67.7	305	
	No...	-----	1	1	1	1	-----	-----	-----	-----	-----	-----	
		<i>Stalks and outer leaves</i>	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
<b>Chicory</b> <sup>21</sup> ( <i>Cichorium intybus</i> ): Leaves.	Av...	11	94.2	1.6	.3	1.0	2.9	0.8	0.2	( <sup>22</sup> )	20.7	95	
	P. E.	-----	.7	-----	-----	-----	-----	-----	-----	-----	-----	-----	
	Max	-----	95.4	1.9	.4	1.4	-----	-----	-----	-----	-----	-----	
	Min	-----	92.6	1.1	.1	.5	-----	-----	-----	-----	-----	-----	
	A. P.	-----	83.8	1.4	.3	.9	2.6	.7	-----	-----	19	85	
<b>Chives</b> ( <i>Allium schoenoprasum</i> ): Bulbs and tops.	No...	-----	1	4	3	3	3	1	1	-----	-----	-----	
	Av...	-----	86.0	3.8	.6	1.8	7.8	2.0	-----	-----	51.8	235	
	Max	-----	91.2	5.1	.8	2.4	-----	2.4	-----	-----	-----	-----	
	Min	-----	80.8	2.6	.3	1.3	-----	1.5	-----	-----	-----	-----	
<b>Collards</b> (see Kale).	No...	-----	2	2	2	2	-----	2	-----	-----	-----	-----	
		<i>Husk and cob</i>	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
<b>Corn, Sweet</b> ( <i>Zea mays</i> ): All.	Av...	<sup>23</sup> 62	73.9	3.7	1.2	.66	20.5	.8	4.29	14.6	107.6	490	
	P. E.	7.3	4.3	.4	.3	.09	-----	.2	1.79	3.9	-----	-----	
	Max	85	86.1	4.9	2.1	.84	-----	1.4	7.56	26.2	-----	-----	
	Min	37	61.3	2.8	.5	.4	-----	.5	1.58	3.4	-----	-----	
	A. P.	-----	28.1	1.4	.5	.3	7.7	.3	-----	-----	41	185	
	No...	-----	141	203	13	13	7	10	194	194	-----	-----	
<b>Young</b> <sup>24</sup> .	Av...	70	80.3	2.9	.8	.56	15.4	.6	5.24	8.7	80.4	365	
	P. E.	5.5	1.7	.1	.2	.07	-----	-----	.91	1.8	-----	-----	
	Max	85	86.1	3.0	1.4	.66	-----	.9	7.56	13.7	-----	-----	
	Min	54	76.0	2.8	.5	.4	-----	.5	1.58	3.4	-----	-----	
	A. P.	-----	24.1	.9	.2	.2	4.6	.2	-----	-----	24	110	
<b>Medium</b> <sup>24</sup> .	No...	-----	39	84	4	4	4	3	79	79	-----	-----	
	Av...	58	72.4	3.7	1.1	.8	22.0	.9	4.02	16.1	112.7	510	
	P. E.	5.0	1.2	.2	.2	-----	-----	.2	1.06	1.5	-----	-----	
	Max	72	75.9	4.1	1.6	.8	-----	1.4	6.1	20.4	-----	-----	
	Min	44	69.0	3.1	.6	.7	-----	.6	2.21	10.8	-----	-----	
	A. P.	-----	30.4	1.6	.5	.3	9.2	.4	-----	-----	48	220	
	No...	-----	44	66	6	6	3	4	62	62	-----	-----	

<sup>21</sup> Often erroneously called "endive" or "French endive" on the markets. See also Endive and Chicory.

<sup>22</sup> No data on starch. Total available carbohydrate, 1 sample, 0.8 per cent

<sup>23</sup> Husks, 140 samples, av. 33 per cent; max. 59 per cent; min. 14 per cent; P. E. 5.6 per cent. Cobs, 138 samples, av. 29 per cent; max. 44 per cent; min. 13 per cent; P. E. 3.7 per cent.

<sup>24</sup> Classified arbitrarily according to moisture content on the basis of certain samples that were described as to maturity. Water content of young, 76.0 per cent or more; of medium, 69.0 to 75.9 per cent; and of old, less than 69.0 per cent.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion									
		Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Total by differ- ence, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
Corn, Sweet ( <i>Zea mays</i> )—Contd. Old <sup>24</sup> .	<i>P. ct. Husk and cob</i>											
	Av...	52	65.7	4.5	1.8	-----	-----	0.8	3.18	21.6	-----	-----
	P. E	4.8	1.3	-----	-----	-----	-----	-----	.44	1.3	-----	-----
	Max	64	68.9	4.9	2.1	-----	-----	.9	4.64	26.2	-----	-----
	Min	37	61.3	4.1	1.6	-----	-----	.8	2.10	17.7	-----	-----
	A. P	-----	31.5	2.2	.9	-----	-----	.4	-----	-----	-----	-----
	No...	84	53	3	3	-----	-----	3	53	53	-----	-----
Cornsalad ( <i>Valeri- anella olitoria</i> ): Leaves and stems.	<i>Roots</i>											
	Av...	4	92.8	2.0	.4	1.2	3.6	.8	-----	-----	26.0	120
	Max	-----	93.4	2.1	-----	1.7	-----	1.1	-----	-----	-----	-----
	Min	-----	92.2	2.0	-----	.8	-----	.6	-----	-----	-----	-----
	A. P	-----	89.1	1.9	.4	1.2	3.4	.8	-----	-----	25	115
	No...	1	2	2	1	2	-----	2	-----	-----	-----	-----
Cowpeas ( <i>Vigna sinensis</i> ): Green, shelled.												
	One...	-----	65.9	9.4	.6	1.4	22.7	-----	-----	-----	133.8	605
	No...	-----	1	1	1	1	-----	-----	-----	-----	-----	-----
Green pods.												
	One...	-----	89.2	3.0	.1	.7	7.0	1.2	-----	-----	40.9	185
	No...	-----	1	1	1	1	-----	1	-----	-----	-----	-----
Cress, Garden ( <i>Le- pidium sativum</i> ): Leaves and stems.	<i>Stalks and outer leaves</i> <sup>24</sup>											
	Av...	37	87.2	4.2	1.4	1.9	5.3	1.2	-----	-----	50.6	230
	Max	46	93.0	6.1	-----	2.3	-----	-----	-----	-----	-----	-----
	Min	29	81.3	2.3	-----	1.5	-----	-----	-----	-----	-----	-----
	A. P	-----	54.9	2.6	.9	1.2	3.4	.8	-----	-----	32	145
	No...	3	2	2	1	2	-----	1	-----	-----	-----	-----
Cucumbers ( <i>Cu- cumis sativus</i> ).	<i>Par- ings</i>											
	Av...	30	96.1	.7	.1	.44	2.7	.5	2.6	-----	14.5	65
	P. E	-----	.5	.1	-----	.07	-----	.1	-----	-----	-----	-----
	Max	39	97.3	.9	.2	.6	-----	.8	3.4	-----	-----	-----
	Min	17	94.7	.2	.0	.29	-----	.2	1.7	-----	-----	-----
	A. P	-----	67.3	.5	.1	.3	1.8	.4	-----	-----	10	45
	No...	3	15	14	9	13	-----	6	2	-----	-----	-----
Dandelion greens ( <i>Leontodon tarax- acum</i> ).												
	Av...	-----	85.8	2.7	.7	2.0	8.8	1.8	.7	.2	52.3	235
	P. E	-----	1.6	.3	.1	-----	-----	-----	-----	-----	-----	-----
	Max	-----	88.8	3.4	1.0	2.3	-----	2.0	-----	-----	-----	-----
	Min	-----	81.4	2.1	.4	1.6	-----	1.5	-----	-----	-----	-----
	A. P	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	No...	-----	6	5	4	3	-----	2	1	1	-----	-----

<sup>24</sup> Classified arbitrarily according to moisture content on the basis of certain samples that were described as to maturity. Water content of young, 76.0 per cent or more; of medium, 69.0 to 75.9 per cent; and of old, less than 69.0 per cent.

<sup>25</sup> Original reports did not describe refuse; presumably stalks and outer leaves.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion									
		Refuse	Water	Protein (N× 6.25)	Fat	Ash	Total by differ- ence, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
Dasheen (Colocasia esculenta): Corms and tubers.	P. ct. Skins											
	Av.	16	66.6	2.9	0.2	1.42	28.9	0.7	1.71	21.8	129.0	585
	P. E.	-----	4.4	.4	-----	.21	-----	.1	.35	3.7	-----	-----
	Max.	16	83.7	4.1	.3	2.22	-----	1.2	2.71	30.3	-----	-----
	Min.	16	56.6	1.9	.1	.94	-----	.5	.31	7.6	-----	-----
	A. P.	-----	55.9	2.4	.2	1.2	24.3	.6	-----	-----	109	495
	No.	2	27	26	26	26	26	26	26	27	-----	-----
Leaves and stems (see Taro). Dock, or Sorrel (Rumex spp.): Leaves and stems.	Stalks											
	Av.	30	93.3	2.1	.3	.95	3.4	.8	.04	.1	24.7	110
	P. E.	-----	.7	.2	.1	.22	-----	.1	-----	-----	-----	-----
	Max.	-----	95.0	2.4	.5	1.5	-----	.9	.07	-----	-----	-----
	Min.	-----	92.2	1.6	.2	.67	-----	.7	.02	-----	-----	-----
	A. P.	-----	65.3	1.5	.2	.7	2.3	.6	-----	-----	17	75
	No.	1	4	5	4	4	4	4	2	1	-----	-----
Eggplant (Solanum melongena).	Calyx and parings <sup>26</sup>											
	Av.	13	92.7	1.1	.2	.54	5.5	.9	-----	-----	28.2	130
	P. E.	-----	.8	.1	.1	.05	-----	.1	-----	-----	-----	-----
	Max.	17	94.0	1.4	.4	.67	-----	1.4	-----	-----	-----	-----
	Min.	8	89.0	.7	.1	.39	-----	.8	-----	-----	-----	-----
	A. P.	-----	80.6	1.0	.2	.5	4.7	.8	-----	-----	25	115
	No.	3	15	13	11	13	9	-----	-----	-----	-----	-----
Endive (Cichorium endivia): Leaves	Stalks and outer leaves											
	Av.	48	93.3	1.6	.2	.89	4.0	.8	-----	-----	24.2	110
	P. E.	-----	.9	.2	.1	.06	-----	.1	-----	-----	-----	-----
	Max.	52	95.6	2.2	.3	1.0	-----	1.1	-----	-----	-----	-----
	Min.	44	91.1	1.0	.1	.74	-----	.6	-----	-----	-----	-----
	A. P.	-----	48.5	.8	.1	.5	2.1	.4	-----	-----	12	55
	No.	2	8	7	5	6	5	-----	-----	-----	-----	-----
Endive and Chicory (Cichorium endivia and C. intybus): Leaves.	Stalks and outer leaves											
	Av.	33	93.6	1.6	.2	.89	3.7	.8	.2	( <sup>27</sup> )	23.0	105
	P. E.	11	.8	.3	.1	.19	-----	.1	-----	-----	-----	-----
	Max.	52	95.6	2.2	.4	1.41	-----	1.1	-----	-----	-----	-----
	Min.	11	91.1	.9	.1	.33	-----	.6	-----	-----	-----	-----
	A. P.	-----	62.7	1.1	.1	.6	2.5	.5	-----	-----	15	70
	No.	4	14	12	9	11	7	1	-----	-----	-----	-----

<sup>26</sup> Calyx and skin reported separately in 2 samples. Calyx, av. 3.6 per cent; max. 5.0 per cent; min. 2.2 per cent. Skin (pared thinly), av. 7.4 per cent; max. 8.8 per cent; min. 6.0 per cent.

<sup>27</sup> No data on starch. Total available carbohydrate, 1 sample, 0.8 per cent.



## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion										
		Refuse	Water	Pro- tein (N X 6.25)	Fat	Ash	Carbohydrates				Fuel value		
							Total by differ- ence, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound	
<b>Fennel</b> ( <i>Foenicu- lum vulgare</i> ): Stems.	<i>P. ct. Leaves</i> ( <sup>28</sup> )	7											
	Av.	7	92.8	1.9	0.2	1.5	3.6	0.8					
	Max.		92.9	2.3	.3	1.5							
	Min.		92.6	1.5	.1	1.5							
	A. P.		86.3	1.8	.2	1.4	3.3	.7			22	100	
	No.	1	2	2	2	2		1					
<b>Garlic</b> ( <i>Allium sati- vum</i> ): Bulbs.	<i>Skins</i>	8											
	Av.	8	74.2	4.4	.2	1.18	20.0	1.0			99.4	450	
	P. E.		8.3	1.5		.18		.1					
	Max.		88.0	6.8	.3	1.44		1.2					
	Min.		58.0	1.3	.1	.7		.8					
	A. P.		68.3	4.0	.2	1.1	18.4	.9			91	415	
<b>Ginger</b> ( <i>Zingiber officinale</i> ): Roots.	No.	1	6	5	4	6		4					
	Av.		84.6	1.8	1.5	1.3	10.8	1.0			63.9	290	
	P. E.		4.5	.2	.2	.2							
	Max.		91.1	2.1	2.0	1.6		1.0					
	Min.		70.2	1.4	.9	.5		.9					
	No.		6	5	5	6		4					
<b>Horseradish</b> ( <i>Ar- moracia rusticana</i> ): Roots.	<i>Par- ings</i> <sup>18</sup>	27											
	Av.	27	73.4	3.2	.2	1.8	21.4	2.4			100.2	455	
	Max.		73.8	3.3	.3	1.9		2.6					
	Min.		73.1	3.2	.2	1.6		2.3					
	A. P.		53.6	2.3	.1	1.3	15.7	1.8			73	330	
	No.	1	2	2	2	2		2					
<b>Jerusalem-arti- chokes</b> ( <i>Helian- thus tuberosus</i> ).	<i>Par- ings</i>	31											
	Av.	31	79.5	2.2	.1	1.17	17.0	.8			77.7	350	
	P. E.		1.3	.3		.18		.1					
	Max.		84.2	3.1	.2	2.00		1.4					
	Min.		74.2	1.1	.0	.87		.6					
	A. P.		54.9	1.5	.1	.8	11.7	.6			54	245	
<b>Jews-mallow</b> ( <i>Cot- chorus olerarius</i> ): Leaves and stems.	No.	1	45	30	24	12		23					
	One.		85.0	5.1	.5								
	No.		1	1	1								
<b>Kale</b> , including collards ( <i>Brassica oleracea acephala</i> ): Leaves.	<i>Par- ings</i>	13											
	Av.	13	86.6	3.9	.6	1.70	7.2	1.2	1.19	0.2	49.8	225	
	P. E.		1.7	.5	.1	.37		.3	.38				
	Max.		91.2	5.7	1.0	3.16		2.0	2.1	.4			
	Min.		81.4	2.8	.2	.99		.5	.56	.1			
	No.	13	12	11	11			9	6	2			
<b>Kale</b> . Collards	A. P.	31 30	60.6	2.7	.4	1.2	5.1	.8			35	160	
	A. P.	32 55	39.0	1.8	.3	.8	3.1	.5			22	100	

<sup>15</sup> Original report did not describe refuse; presumably parings.<sup>16</sup> Original report did not describe refuse; presumably leaves.<sup>17</sup> No data on sugar or starch. Total available carbohydrate, 1 sample, 1.6 per cent.<sup>18</sup> Much of the carbohydrate occurs as inulin. Free reducing sugars, 4 samples only, av. 0.8 per cent; max. 2.0 per cent; min. 0.2 per cent. Total water-soluble carbohydrates determined as total sugar after hydrolysis, 404 samples, av. 15.25 per cent; max. 21.89 per cent; min. 10.45 per cent; P. E. 1.45 per cent. Levulose, determined in the hydrolyzed extract, 402 samples, av. 12.24 per cent; max. 19.56 per cent; min. 6.0 per cent; P. E. 1.60 per cent.<sup>19</sup> Kale, 2 samples, stalks and outer leaves, max. 38 per cent; min. 22 per cent.<sup>20</sup> Collards, 1 sample, refuse not described in original report; presumably tough stalks and discarded leaves.



## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion										
		Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Carbohydrates			Fuel value			
							Total by differ- ence, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound	
Kohlrabi ( <i>Brassica oleracea gongyloides</i> ): Stems.	<i>P. ct. Tops and par- ings</i> <sup>33</sup>												
	Av.	46	90.1	2.1	0.1	1.05	6.7	1.1	2.2	<i>P. ct.</i>	<i>Cals.</i> 38.1	<i>Cals.</i> 165	
	P. E.		1.9	.4		.13		.2					
	Max.	54	94.1	2.7	.2	1.3		1.4					
	Min.	37	85.4	1.0	.0	.72		.6					
	A. P.		48.7	1.1	.1	.6	3.5	.6			19	85	
	No.	2	12	9	8	10		8	1				
	Lambsquarters ( <i>Chenopodium album</i> ): Leaves and stems.	Av.		84.2	3.8	.7	3.0	8.3	2.6	.3	1.4	54.7	250
		Max.		87.6	3.9	.8							
		Min.		80.8	3.8	.6							
No.			2	2	2	1		1	1	1			
Lambsquarters, Algerian ( <i>Chenopodium amaranticolor</i> ): Leafy shoots.	Av.		76.7	7.6	.9	4.3	10.5		( <sup>34</sup> )	( <sup>34</sup> )	80.5	365	
	Max.		77.9	8.5	1.1								
	Min.		75.5	6.7	.7								
	No.		2	2	2	1							
Leeks ( <i>Allium porrum</i> ): Bulbs and leaves. <sup>35</sup>	<i>Tops and root- lets</i> <sup>35</sup>												
	Av.	48	88.2	2.5	.4	1.03	7.9	1.3	2.6	1.4	45.2	205	
	P. E.	3.9	1.7	.5	.2	.15							
	Max.	56	91.9	3.9	.7	1.30		1.7					
	Min.	40	85.3	1.2	.0	.7		1.1					
	A. P.		45.9	1.3	.2	.5	4.1	.7			23	105	
Lettuce ( <i>Lactuca sativa</i> ).	<i>Stalk and outer leaves</i>												
	Av.	31	94.8	1.2	.2	.91	2.9	.6	1.6	( <sup>36</sup> )	18.2	85	
	P. E.		1.0	.3	.1	.19		.2					
	Max.	44	97.4	1.9	.6	1.41		1.1	2.2				
	Min.	13	91.5	.5	.0	.5		.3	.9				
	A. P.		65.4	.8	.1	.6	2.1	.4			12	55	
Mung Bean sprouts (see Beans, Mung).	No.	3	26	18	14	20		13	3				

<sup>33</sup> Original reports did not describe refuse; presumably parings and tops of purchased sample. Parings only, in percentage of sample without tops, 1 sample, 23 per cent.

<sup>34</sup> No data on sugar or starch. Total available carbohydrate, 2 samples, av. 1.5 per cent; max. 2.7 per cent; min. 0.3 per cent.

<sup>35</sup> Most of leaf discarded as refuse; lower portion considered edible.

<sup>36</sup> No data on starch; presumably average is less than 1 per cent. Total available carbohydrate, 1 sample, 1.0 per cent.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion										
			Refuse	Water	Protein (N× 6.25)	Fat	Ash	Total by difference, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
		P. ct. Skins	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals. ( <sup>45</sup> )	Cals. ( <sup>46</sup> )
Mushrooms: All.	Av.	9	91.1	( <sup>37</sup> 45)	0.3	1.14	( <sup>38</sup> )	0.9					
	P. E.		1.1		.1	.22		.2					
	Max.		94.7		.8	1.86		1.3					
	Min.		87.9		.1	.58		.2					
	A. P.		82.9		.3	1.0		.8					
	No.	1	28		28	28		19					
	Common, field ( <i>Agaricus campestris</i> ).	Av.		90.4	( <sup>37</sup> 41)	.5	1.01	( <sup>38</sup> )	.6			( <sup>40</sup> )	( <sup>40</sup> )
	P. E.		1.2			.21							
	Max.		92.8		.8	1.41		.8					
	Min.		87.9		.1	.7		.5					
	No.		5		5	5		2					
Morel ( <i>Mor- chella</i> spp.).	Av.		90.6	( <sup>37</sup> 41)	.5	1.1	( <sup>38</sup> )	.8				( <sup>40</sup> )	( <sup>40</sup> )
	Max.		91.2		.7	1.2		.9					
	Min.		89.5		.4	1.0		.8					
	No.		5		5	5		2					
Mustard greens ( <i>Brassica</i> spp.).		Stalks and lower leaves <sup>41</sup>											
	Av.	27	92.2	2.3	.3	1.21	4.0	.8		0.4	( <sup>44</sup> )	27.9	125
	P. E.		1.6	.6	.2	.22		.2					
	Max.		95.7	4.3	.9	2.06		1.3		.4			
	Min.		88.7	1.2	.1	.81		.5		.3			
	A. P.		67.3	1.7	.2	.9	2.9	.6				20	90
	No.	1	11	9	7	11		8	2				
Nettle ( <i>Urtica dioica</i> ): Leafy shoots.	One.		82.4	5.5	.7	2.3	9.1	2.0				64.7	295
	No.		1	1	1	1		1					
Oca ( <i>Oxalis tube- rosa</i> ): Tubers.	Av.		80.9	1.4	.2	1.0	<sup>43</sup> 16.5			<sup>45</sup> 3.5	<sup>45</sup> 11.2	73.4	335
	No.		<sup>47</sup> 5	<sup>47</sup> 5	1	<sup>47</sup> 5				4	4		
Okra ( <i>Hibiscus esculentus</i> ).		Stem ends <sup>42</sup>											
	Av.	12	89.8	1.8	.2	.84	7.4	1.0				38.6	175
	P. E.		1.4	.3	.1	.14		.1					
	Max.	14	93.3	2.3	.4	1.05		1.3					
	Min.	10	87.4	.9	.1	.5		.8					
	A. P.		79.0	1.6	.2	.7	6.5	.9				24	155
	No.	2	8	8	8	8		6					

<sup>37</sup> Protein content is probably low; it can not be calculated from total nitrogen, most of which is in the form of nonprotein nitrogen.

<sup>38</sup> Total nitrogen, 28 samples, av. 0.57 per cent; max. 0.98 per cent; min. 0.27 per cent; P. E. 0.13 per cent.

<sup>39</sup> Carbohydrates are mostly nonextractable and considered, therefore, to have practically no nutritive value.

<sup>40</sup> Probably little or no fuel value; see footnotes 37 and 39.

<sup>41</sup> Total nitrogen, 5 samples, av. 0.58 per cent; max. 0.98 per cent; min. 0.33 per cent; P. E. 0.14 per cent.

<sup>42</sup> Total nitrogen, 3 samples, av. 0.48 per cent; max. 0.50 per cent; min. 0.46 per cent.

<sup>43</sup> Original report did not describe refuse; presumably stalks and lower leaves.

<sup>44</sup> Starch is less than 0.1 per cent, according to 1 sample.

<sup>45</sup> Acid as anhydrous citric, average of 4 samples, 0.25 per cent.

<sup>46</sup> This figure represents an average of 4 samples, range not reported.

<sup>47</sup> Only 1 sample reported individually.

<sup>48</sup> Original reports did not describe refuse; presumably stem ends.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion									
		Refuse	Water	Pro- tein (N X 6.25)	Fat	Ash	Carbohydrates			Fuel value		
							Total by difference, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
Onions ( <i>Allium cepa</i> ): All.	<i>P. ct.</i>	<i>Skins</i> <sup>49</sup>										
	Av.	6	87.5	1.4	0.2	0.58	10.3	0.8	6.7	0.5	48.6	220
	P. E.	2.1	3.0	.3	.1	.13		.2	1.3			
	Max.	10	95.2	2.7	.8	1.20		1.8	8.4			
	Min.	2	70.2	.4	.1	.17		.4	3.7			
	A. P.		82.2	1.3	.2	.5	9.8	.8			46	210
	No.	12	30	27	23	25		15	4	1		
	Top onions.											
	One.		81.5	2.1	.2	.7	15.5	.7			72.2	325
	No.		1	1	1	1		1				
Young, green.	<i>Tops, skins, and roots</i> <sup>50</sup>											
	Av.	59	87.6	1.0	.2	.6	10.6	1.8	3.7	.5	48.2	220
	P. E.		1.0	.2	.1							
	Max.	75	89.1	1.3	.3	.7						
	Min.	50	85.4	.8	.1	.5						
	A. P.		35.9	.4	.1	.3	4.3	.7			20	90
	No.	3	4	4	4	3		1	1	1		
	<i>Roots and tops of leaves</i> <sup>51</sup>											
	Av.	34	89.2	2.2	.6	.8	7.2	.9			43.0	195
	P. E.		3.5	.8	.4	.3						
Onions, Welsh ( <i>Allium fistulosum</i> ): Base of leaves.	Max.		92.6	4.3	1.6	1.6						
	Min.		80.3	1.4	.1	.4						
	A. P.		58.9	1.5	.4	.6	4.6	.6			23	125
	No.	1	4	4	4	4		1				
Orach, Garden ( <i>Atriplex hortensis</i> ): Leaves and stems.	Av.		88.0	4.5	.4	2.4	4.7	1.0	.06	.2	40.4	185
	Max.		88.8	4.6	.4				.08			
	Min.		87.2	4.4	.4				.04			
	No.		2	2	2	1		1	2	1		
Orach, Peruvian (see Quinoa).												
Palmetto, or Pal- metto Cabbage ( <i>Inodes palmetto</i> ): Buds.	One.		87.2	3.3	.6	1.7	7.2	.9	1.0	1.0	47.4	215
	No.		1	1	1	1		1	1	1		
Parsley ( <i>Petroseli- num hortense</i> ): Common: Leaves.												
	Av.		83.9	3.7	1.0	2.4	9.0	1.8			59.8	270
	P. E.		2.0	.1		.3						
	Max.		87.6	4.0	1.4	2.9		2.4				
	Min.		79.3	3.4	.7	1.7		1.4				
	No.		5	4	3	4		3				

<sup>49</sup> Skins, or skins and rootlets. Original reports in many cases did not describe refuse. Young green onions which are reported separately but also included here in the edible portion, are excluded from the data on refuse.

<sup>50</sup> Original reports did not describe refuse; presumably tops, skins, and roots.

<sup>51</sup> Original report did not describe refuse; presumably roots and tops of leaves.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion									
		Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Carbohydrates			Fuel value		
							Total by differ- ence, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
<b>Parsley</b> ( <i>Petroseli- num hortense</i> )— Continued. Hamburg: Roots.	One...	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>P. ct.</i>	<i>Cals.</i>	<i>Cals.</i>
	No...	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
<b>Parsnips</b> ( <i>Pastina- ca sativa</i> ).	Av...	<i>Scrap- ings</i>										
	P. E...											
	Max...											
	Min...											
<b>Peas, Black-eyed</b> (see Cowpeas).	A. P...											
	No...											
<b>Peas</b> ( <i>Pisum sati- vum</i> ): Green, shelled: All.	Av...	<i>Shells</i>										
	P. E...											
	Max...											
	Min...											
<b>Young.<sup>33</sup></b>	A. P...											
	No...											
<b>Medium.<sup>33</sup></b>	Av...											
	P. E...											
	Max...											
	Min...											
<b>Old.<sup>33</sup></b>	A. P...											
	No...											
<b>Sugar peas.</b> Green pods.	Av...											
	P. E...											
	Max...											
	Min...											

<sup>33</sup> Classified arbitrarily according to moisture content on the basis of certain samples that were described as to maturity. Water content of young, 80.0 per cent or more; of medium, 70.0 to 79.9 per cent; and of old less than 70.0 per cent.



## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion										
			Refuse	Water	Pro- tein (N X 6.25)	Fat	Ash	Carbohydrates			Fuel value		
								Total by difference, includ- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
<b>Peppers, or Red- peppers (Capsi- cum annuum):</b> All. <sup>83</sup>	Av. . . . .	<sup>84</sup> 18	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
	P. E. . . . .	3.9	91.5	1.4	0.4	0.53	6.2	1.6	2.1	4.2	34.0	155	
	Max. . . . .	31	94.3	2.6	1.1	.76	-----	2.4	3.0	-----	-----	-----	
	Min. . . . .	13	88	.8	.1	.31	-----	.8	1.5	-----	-----	-----	
	A. P. . . . .	-----	75.0	1.1	.3	.4	5.2	1.3	-----	-----	28	125	
	No. . . . .	7	13	8	10	7	-----	5	5	1	-----	-----	
	<b>Green. <sup>83</sup></b>	Av. . . . .	<sup>84</sup> 16	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
		P. E. . . . .	1.0	92.4	1.2	.2	.5	5.7	1.4	1.7	4.2	29.4	135
		Max. . . . .	19	94.0	1.6	.3	.8	-----	2.4	1.8	-----	-----	-----
		Min. . . . .	13	90.8	.8	.1	.3	-----	.8	1.5	-----	-----	-----
A. P. . . . .		-----	77.6	1.0	.2	.4	4.8	1.2	-----	-----	25	115	
No. . . . .		3	4	3	3	3	-----	3	2	1	-----	-----	
<b>Red. <sup>83</sup></b>		Av. . . . .	<sup>84</sup> 20	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
		P. E. . . . .	4.7	89.2	1.3	.7	.7	8.1	1.6	3.0	-----	43.9	200
		Max. . . . .	31	91.7	1.4	-----	-----	-----	-----	-----	-----	-----	-----
		Min. . . . .	13	88	1.2	-----	-----	-----	-----	-----	-----	-----	-----
	A. P. . . . .	-----	71.4	1.0	.6	.5	6.5	1.3	-----	-----	35	160	
	No. . . . .	4	3	2	1	1	-----	1	1	-----	-----	-----	
	<b>Pigweed (see Lambsquarters). Pokeberry, or Poke (Phytolacca amer- icana):</b> Shoots.	Av. . . . .	-----	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
		Max. . . . .	-----	91.6	2.6	.4	1.7	3.7	-----	-----	.2	28.8	130
		Min. . . . .	-----	94.3	2.8	.7	-----	-----	-----	-----	-----	-----	-----
		-----	-----	89.0	2.3	.1	-----	-----	-----	-----	-----	-----	-----
No. . . . .		-----	2	2	2	1	-----	-----	-----	1	-----	-----	
<b>Potatoes (Solanum tuberosum).</b>		Parings	-----	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
		Av. . . . .	16	77.8	2.0	.1	.99	19.1	.4	<sup>85</sup> .87	<sup>86</sup> 14.7	85.3	385
		P. E. . . . .	3.9	1.8	.3	-----	.11	-----	.1	.20	.6	-----	-----
		Max. . . . .	25	85.2	3.9	.3	1.9	-----	.9	1.5	16.4	-----	-----
		Min. . . . .	3	66.0	.9	.0	.5	-----	.2	.21	12.1	-----	-----
	A. P. . . . .	-----	65.4	1.7	.1	.8	16.0	.3	-----	-----	72	325	
	No. . . . .	13	848	631	182	619	-----	166	18	30	-----	-----	
	<b>Pumpkin (Cucur- bita pepo):</b> Mature, flesh.	Av. . . . .	<sup>87</sup> 31	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
		P. E. . . . .	-----	1.8	.4	.1	.18	-----	.2	.4	1.4	-----	-----
		Max. . . . .	36	94.6	2.2	.7	1.30	-----	1.8	3.5	5.2	-----	-----
Min. . . . .		26	84.4	.4	.1	.5	-----	.6	1.7	.1	-----	-----	
A. P. . . . .		-----	62.4	.8	.1	.6	5.1	.9	-----	-----	24	110	
No. . . . .		2	11	10	9	9	-----	9	4	4	-----	-----	
<b>Immature (see Squash, sum- mer).</b>		Av. . . . .	-----	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

<sup>83</sup> Sweet and pungent varieties. Edible part is fruit without seeds and core.<sup>84</sup> Stem ends, seeds, and cores.<sup>85</sup> Samples on which this value is based have water content averaging 78.8 per cent; max. 81.0 per cent; min. 77.1 per cent.<sup>86</sup> Samples on which this value is based have water content averaging 79.2 per cent; max. 81.3 per cent; min. 77.1 per cent. This average for water is slightly high. Total available carbohydrate (starch by acid hydrolysis and sugar), in 380 other samples, averaged 16.1 per cent, max. 23.7 per cent, min. 11.4 per cent; the water content of these averaging 77.2 per cent (max. 83.3 per cent, min. 70.9 per cent)—is more representative of the sample as a whole.<sup>87</sup> Rind and contents of cavity. Rind, 1 sample, 17 per cent. Contents of cavity, 7 samples, av. 8 per cent; max. 11 per cent; min. 4 per cent; P. E. 1.7 per cent.



## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion									
		Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Carbohydrates			Fuel value		
							Total by difference, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
<b>Purslane</b> (Portu- laca spp.): Leaves and stems.	Av.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
	P. E.	93.2	1.6	0.4	1.48	3.3	0.8				23.2	105
	Max.	1.2	.4	.2	.30							
	Min.	95.2	2.5	1.1	2.0		1.0					
	A. P.	90.4	1.0	.1	.96		.5					
<b>Quinoa</b> (Chenopo- dium quinoa): Leafy shoots.	No.	6	6	6	5		3					
	One.	92.7	2.4	.2								
	No.	1	1	1								
<b>Radishes</b> (Rapha- nus sativus).	Av.	51	93.6	1.2	.1	.95	4.2	.7	3.4		22.5	100
	P. E.	9	1.7	.4	.1	.24		.1				
	Max.	72	95.7	3.0	.3	1.8		1.1	3.4			
	Min.	31	86.6	.7	.1	.69		.6	3.4			
	A. P.	45.9	.6	.0	.5	2.0	.3				11	50
<b>Rutabagas</b> (Bras- sica campestris).	No.	6	11	10	5	7		5	2			
<b>Saladrocket</b> (Eruca sativa): Leaves and stems.	Av.	15	89.1	1.1	.1	.83	8.9	1.3	6.7		40.9	185
	P. E.	1	1.0	.2		.18		.1	.4			
	Max.	16	91.8	1.5	.3	1.41		1.4	7.6			
	Min.	15	86.1	.8	.1	.45		1.1	6.1			
	A. P.	75.7	.9	.1	.7	7.6	1.1				35	160
<b>Salsify</b> (see Vege- table-oyster and Black salsify).	No.	2	16	15	7	12		8	4			
<b>Seakale</b> (Crambe maritima): Shoots.	Av.	8	92.2	1.1	.2	.9	5.6	.5		0.3	28.6	130
	Max.	8	96.0		.4							
	Min.	88.3		.1								
	A. P.	84.8	1.0	.2	.8	5.2	.5				27	120
	No.	1	2	1	2	1		1		1		
<b>Shallot</b> (Allium ascalonicum): Bulbs.	Av.	58 23	93.4	1.5	.58 .2	.6	4.3	.8			25.0	115
	Max.	93.4	1.6		.6							
	Min.	93.3	1.4		.5							
	A. P.	71.9	1.2	.58 .2	.5	3.2	.6				19	85
	No.	1	2	2		2		1				
<b>Soybeans</b> (Soja max): Green, shelled.	Av.	47	64.7	13.6	6.3	2.2	13.2	2.2	2.6	2.0	163.9	745
	P. E.	7.5	2.3	2.4	.6			1.4				
	Max.	75.7	18.9	12.8	3.9			3.1				
	Min.	42.0	9.9	2.2	1.4			1.3				
	A. P.	34.3	7.2	3.3	1.1	7.1	1.2				87	395
<b>Soybeans</b> (Soja max): Green, shelled.	No.	1	5	5	5	5		4	1	1		

<sup>1</sup> Original report did not describe refuse; presumably tough stems.<sup>58</sup> Original report described refuse as "root and waste."<sup>59</sup> Assumed.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion									
								Carbohydrates			Fuel value	
		Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Total by differ- ence, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
		P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
<b>Soybean sprouts</b> (Soja max).	Av.	82.3	8.5	1.8	1.07	6.3	0.9				75.4	340.
	P. E.	2.6	1.4	.7	.19		.1					
	Max.	87.9	11.5	3.5	1.34		1.1					
	Min.	77.0	5.7	.8	.6		.7					
	No.	4	4	4	4		4					
		Stalks and outer leaves <sup>60</sup>										
<b>Spinach</b> (Spinacia oleracea).	Av.	18	92.7	2.3	.3	1.53	3.2	.6	0.3		24.7	110.
	P. E.	3.7	.8	.3	.1	.19						
	Max.	28	95.0	3.4	.6	2.0		.7	.4			
	Min.	10	89.4	1.9	.1	1.06		.5	.2			
	A. P.		76.0	1.9	.2	1.3	2.6	.5			20	90.
		No.	10	22	11	7	20	8	2			
<b>Spinach, New Zealand</b> (Tetra- gonia expansa): Leaves and stems.	Av.		91.4	2.2	.2	2.11	4.1	.8	.6	0.3	27.0	120.
	P. E.		1.4	.4		.23						
	Max.		94.0	3.3	.2	2.43		1.0	.9			
	Min.		88.4	1.4	.2	1.5		.6	.4			
	No.		8	5	3	8		3	2	1		
<b>Squashes</b> <sup>61</sup> (Cu- cubita spp.): Cushaw (C. moschata): Flesh.	Av.	<sup>62</sup> 21	90.4	1.2	.3	.76	7.3	1.2	4.5	.6	36.7	165
	P. E.		.8	.2	.1	.16		.4				
	Max.	24	92.1	1.4	.6	1.30		2.2				
	Min.	18	88.4	.7	.0	.53		.8				
	A. P.		71.4	.9	.2	.6	5.9	.9			29	130.
		No.	2	7	7	7		5	1	1		
		Stem end <sup>63</sup>										
<b>Summer squash</b> (C. pepo).	Av.	3	95.0	.6	.1	.44	3.9	.5	<sup>64</sup> 1.0	<sup>64</sup> .2	18.9	85.
	P. E.		.8	.1		.06						
	Max.	4	96.8	.9	.2	.6		.6				
	Min.	2	93.0	.2	.0	.3		.4				
	A. P.		92.2	.6	.1	.4	3.7	.5			18	80.
		No.	2	8	8	6		3	1	1		
<b>Winter squash</b> (C. maxima): Flesh.	Av.	<sup>65</sup> 26	88.6	1.5	.3	.83	8.8	1.4	3.9	1.0	43.9	200.
	P. E.		2.7	.3	.1	.11		.4				
	Max.		95.2	2.9	.9	1.3		3.1	5.0			
	Min.		78.9	.6	.1	.38		.5	2.8			
	A. P.		65.6	1.1	.2	.6	6.5	1.0			32	145.
		No.	39	37	37	37		24	2	1		

<sup>60</sup> Original reports did not describe refuse; presumably outer leaves and main stalks.<sup>61</sup> See pumpkin for mature *C. pepo*.<sup>62</sup> Rind and contents of cavity. One sample, rind, 9 per cent; contents of cavity, 15 per cent.<sup>63</sup> Original reports did not describe refuse; presumably stem end. Three samples including stem end, skin, and seed part, av. 35 per cent; max. 45 per cent; min. 27 per cent.<sup>64</sup> Total available carbohydrate, 1 additional sample, 1.4 per cent.<sup>65</sup> Total refuse, i. e., rind and contents of cavity. This figure is an estimate based on calculations from the following data: Contents of cavity, 4 samples, av. 10 per cent; max. 15 per cent; min. 7 per cent; and rind expressed in percentage of rind and flesh, 16 samples, av. 18 per cent; max. 47 per cent; min. 6 per cent. Two samples reported as total refuse and not included in the above estimate, averaged 23 per cent; max 25 per cent; min. 21 per cent.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion									
			Carbohydrates								Fuel value	
		Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Total by difference, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
<b>Sweetpotatoes</b> ( <i>Ipomoea batatas</i> ).	<i>P. ct.</i>											
	Av.---	14	68.5	1.8	0.7	1.07	27.9	1.0	5.35	<sup>66</sup> 20.2	125.1	565
	P. E.---	2.0	2.8	.5	.3	.14	-----	.2	1.70	2.8	-----	-----
	Max.---	20	82.7	4.4	2.5	1.85	-----	1.8	11.9	29.8	-----	-----
	Min.---	1	58.5	.5	.2	.4	-----	.6	1.15	8.8	-----	-----
	A. P.---	-----	58.9	1.5	.6	.9	24.1	.9	-----	-----	108	490
		No.---	7	196	98	97	98	75	131	97	-----	-----
<b>Sweet potato</b> <b>tops</b> <sup>67</sup> ( <i>Ipomoea</i> <i>spp.</i> ).	<i>P. ct.</i>											
	Av.---	<sup>68</sup> 24	89.6	2.3	.3	1.55	6.3	1.2	-----	-----	37.1	170
	P. E.---	-----	2.3	.8	.1	.17	-----	.3	-----	-----	-----	-----
	Max.---	-----	93.4	4.2	.4	1.98	-----	1.9	-----	-----	-----	-----
	Min.---	-----	84.2	1.2	.0	1.27	-----	.7	-----	-----	-----	-----
	A. P.---	-----	68.1	1.7	.2	1.2	4.8	.9	-----	-----	28	125
		No.---	1	5	5	5	5	5	-----	-----	-----	-----
<b>Taro</b> ( <i>Colocasia</i> <i>spp.</i> ): Corms and tu- bers. Excluding dash- eens.	<i>Skins</i>											
	Av.---	18	75.1	2.0	.2	1.17	21.5	.8	1.42	18.2	95.8	435
	P. E.---	-----	4.4	.3	.1	.19	-----	.1	.25	3.6	-----	-----
	Max.---	29	85.2	2.9	.4	1.60	-----	1.1	1.95	25.3	-----	-----
	Min.---	11	61.8	1.4	.0	.53	-----	.6	.79	10.1	-----	-----
	A. P.---	-----	61.6	1.6	.2	1.0	17.6	.7	-----	-----	79	360
		No.---	8	14	14	14	14	12	6	6	-----	-----
Leaves and stems. Including dash- een.	<i>Skins</i>											
	Av.---	-----	87.8	2.7	.7	1.6	7.2	1.4	-----	.4	45.9	210
	P. E.---	-----	2.6	.8	.3	.3	-----	.2	-----	-----	-----	-----
	Max.---	-----	93.2	4.3	1.2	2.4	-----	1.9	-----	-----	-----	-----
	Min.---	-----	84.2	.8	.1	.9	-----	1.0	-----	-----	-----	-----
	A. P.---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
		No.---	5	5	5	5	5	5	-----	1	-----	-----
Shoots. Excluding dash- een.	One.---	-----	95.4	.9	.1	.8	2.8	.6	-----	-----	15.7	70
	No.---	-----	1	1	1	1	1	1	-----	-----	-----	-----
<b>Tomatoes</b> ( <i>Lycop- ersicon esculen- tum</i> ): Red.	<i>Skins</i> <sup>69</sup>											
	Av.---	2	94.1	1.0	.3	.57	<sup>70</sup> 4.0	.6	3.37	( <sup>71</sup> )	22.7	105
	P. E.---	-----	.7	.2	.1	.10	-----	.1	.39	-----	-----	-----
	Max.---	-----	96.7	1.8	.5	1.0	-----	1.2	4.06	-----	-----	-----
	Min.---	-----	90.6	.7	.1	.34	-----	.2	2.3	-----	-----	-----
	A. P.---	-----	92.2	1.0	.3	.6	3.9	.6	-----	-----	22	100
		No.---	1	48	34	28	31	27	7	-----	-----	-----
Green or unripe.	One.---	-----	94.7	1.2	.2	.6	3.3	.4	1.2	.4	19.8	90
	No.---	-----	1	1	1	1	1	1	1	1	-----	-----

<sup>66</sup> Starch conversion by acid hydrolysis. Dextrin considered to be present in negligible quantities.<sup>67</sup> Data include figures on 2 samples of tops of common sweetpotatoes, *Ipomoea batatas*, and 3 of oriental, *I. aquatica*.<sup>68</sup> Original report did not describe refuse; presumably stems and discarded leaves.<sup>69</sup> Original report did not describe refuse; presumably skins. One other sample, in which skin was considered edible, reported refuse as 1 per cent. Skins and seeds total 5 per cent in each of two samples.<sup>70</sup> Acid as citric, 22 samples, av. 0.51 per cent; max. 0.74 per cent; min. 0.31 per cent; P. E. 0.08 per cent.<sup>71</sup> Less than 0.1 per cent starch, according to six samples.



## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion										
			Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Carbohydrates			Fuel value		
								Total by differ- ence, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
Truffles spp.)	(Tuber	Av.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	Cals.	Cals.
		Max.	72.5	72.5	( <sup>72</sup> )	0.6	1.7	( <sup>39</sup> )				( <sup>73</sup> )	( <sup>73</sup> )
		Min.	74.2	74.2		.8	1.8						
		No.	70.8	70.8		.5	1.7						
Turnips (Brassica rapa)		Par- ings <sup>74</sup>											
		13	90.9	1.1	.2	.73	7.1	1.1	4.6		34.6	155	
		P. E. 1 C	1.7	.3	.1	.08		.1					
		Max	15	95.7	2.1	.4	1.0	1.4					
Turnip tops <sup>75</sup> (Brassica rapa)		Min.	10	85.6	.7	.1	.5	.6					
		A. P.	79.1	1.0	.2	.6	6.1	1.0		30	135		
		No.	6	21	19	18	19	12	1				
		Dis- carded leaves											
Turnip tops <sup>75</sup> (Brassica rapa)		16	89.5	2.9	.4	1.76	5.4	1.2		36.8	165		
		P. E.	1.8	.6	.1	.30		.2					
		Max	94.2	5.2	.8	2.5	1.7						
		Min.	84.4	1.7	.1	1.04	.6						
Udo (Aralia cordata): Shoots.		A. P.	75.2	2.4	.3	1.5	4.6	1.0		31	140		
		No.	1	10	10	8	10	7					
		Av.	95.0	1.0	.2	.64	3.2	.8	1.1	( <sup>74</sup> )	18.6	85	
		P. E.	.3	.1		.14							
Vegetable-oyster or Salsify (Trago- pogon porrifolius)		Max	95.4	1.3	.2	1.0	1.1						
		Min.	94.3	.7	.1	.50	.5						
		No.	4	4	4	4	2	1					
		Par- ings											
Vegetable-oyster or Salsify (Trago- pogon porrifolius)		24	79.1	3.5	1.0	.88	<sup>75</sup> 15.5	1.8		85.0	385		
		P. E.	2.2	.4		.23							
		Max	36	85.4	4.3	1.5	1.21	2.0					
		Min.	13	76.4	3.0	.3	.40	1.6					
		A. P.	60.1	2.7	.8	.7	11.7	1.4		65	295		
		No.	2	6	5	3	4	2					

<sup>69</sup> Carbohydrates are mostly nonextractable and considered, therefore, to have practically no nutritive value.

<sup>74</sup> Starch is less than 0.1 per cent, according to 1 sample.

<sup>72</sup> Protein content is probably low. It can not be calculated from total nitrogen, most of which is in the form of nonprotein nitrogen. Total nitrogen, 3 samples, av. 1.26 per cent; max. 1.46 per cent; min. 1.06 per cent.

<sup>73</sup> Probably little or no fuel value; see footnotes 72 and 39.

<sup>74</sup> Parings expressed in percentage of turnips purchased without tops. Total refuse, including tops, 2 other samples, av. 34 per cent; max. 38 per cent; min. 31 per cent.

<sup>75</sup> Includes some samples of rutabaga tops.

<sup>76</sup> Much of the carbohydrate probably occurs as inulin. Total water-soluble carbohydrates determined as total sugar after hydrolysis, 1 sample, 8.1 per cent; levulose, included in total sugars, 6.3 per cent.

## Composition of fresh vegetables—Continued

		As pur- chased	Edible portion										
			Refuse	Water	Pro- tein (N× 6.25)	Fat	Ash	Carbohydrates			Fuel value		
								Total by differ- ence, in- clud- ing fiber	Fiber	Sugars	Starch	Per 100 grams	Per pound
Vinespinach (Ba- sella rubra): Leaves and stems.	<i>P. ct.</i>												
	<i>P. ct.</i>	93.2	2.0	0.3	1.5	3.0	0.6						
	<i>P. ct.</i>	94.9	2.5	.5	1.8								
	<i>P. ct.</i>	91.1	1.4	.1	1.2								
	No.		5	5	5	2		1					
Watercress (Sisym- brium nasturtium- aquaticum): Leaves and stems.	<i>P. ct.</i>												
	<i>P. ct.</i>	93.6	1.7	.3	1.09	3.3	.5					22.7	105
	<i>P. E.</i>	1.2	.5	.1	.24								
	<i>P. E.</i>	97.1	2.9	.5	1.72		.6						
	<i>P. E.</i>	90.8	.7	.1	.6		.3						
No.		7	6	5	6		3						
Waternut (Eleo- charis tuberosa): Tubers.	<i>Skins</i> <sup>73</sup>												
	<i>Skins</i> <sup>73</sup>	22	77.1	1.5	.1	1.10	20.2	.8	8.8	7.7	87.7	400	
	<i>P. E.</i>		1.8	.1	.1	.13		.2					
	<i>P. E.</i>	23	79.5	1.8	.3	1.4		1.2	8.9	8.1			
	<i>P. E.</i>	16	71.2	1.1	.0	.80		.6	8.6	7.3			
No.		60.1	1.2	.1	.9	15.7	.6				68	310	
Witloof (see Chic- ory). Yams, Winged (Dioscorea alata): Tubers.	<i>P. E.</i>												
	<i>P. E.</i>	72.6	2.1	.2	.98	24.1	.8	1.0	17.7	106.6	485		
	<i>P. E.</i>	2.9	.4		.18		.1	.5	3.0				
	<i>P. E.</i>	80.0	3.2	.3	1.38		1.1	2.7	23.5				
	<i>P. E.</i>	67.3	1.6	.1	.52		.7	.4	13.1				
No.		12	12	11	12		10	9	4				

<sup>77</sup> No data on starch or sugar. Total available carbohydrate, 2 samples, av. 1.0 per cent; max. 1.7 per cent; min. 0.2 per cent.

<sup>78</sup> Original reports did not describe refuse; presumably skins.

<sup>79</sup> Starch conversion by acid hydrolysis.



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